REPUBLIC OF THE PHILIPPINES
Department of Science and Technology
Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
Science Garden, Agham Road, Diliman, Quezon City 1100

TERMS OF REFERENCE
FOR THE SUPPLY, DELIVERY, INSTALLATION, TESTING, SUPERVISION, TRAINING AND COMMISSIONING OF VIRTUAL DESKTOP INFRASTRUCTURE WITH CENTRALIZED USER IDENTITY

1. OVERVIEW

As PAGASA seek to improve management and user productivity; the need to centralized client OS and software installations, centralized patches, centralized data security, centralized technical support are essential especially in an establishment where human resources for IT support are limited.

Virtual Desktop Infrastructure (VDI) is a solution for server hosted, virtual desktop computing that leverages thin client architecture and centralizes endpoint images as virtual machines. By centralizing endpoint infrastructure, PAGASA can realize lower costs through electricity consumption, hardware requirements, hardware phase-out issues and endpoint compliance exceptions.

VDI also aims to reduce cost on purchasing high end desktop PCs. PAGASA desktop PC end users commonly use Microsoft Office, PDF reader, Google Chrome, Photoshop and AutoCAD for infra section. Nowadays, most of desktop PCs installed in PAGASA are for Gaming, it has i7 processor, 16gb Memory and 10GB GPU with an estimated power consumption of 290 Watts for 8 hours which is a bit too much for the said applications. VDI will configure the end user workstation based on their requirement and reduce end user power consumption up to 60% since the only running hardware for end users are monitor and thin client only.

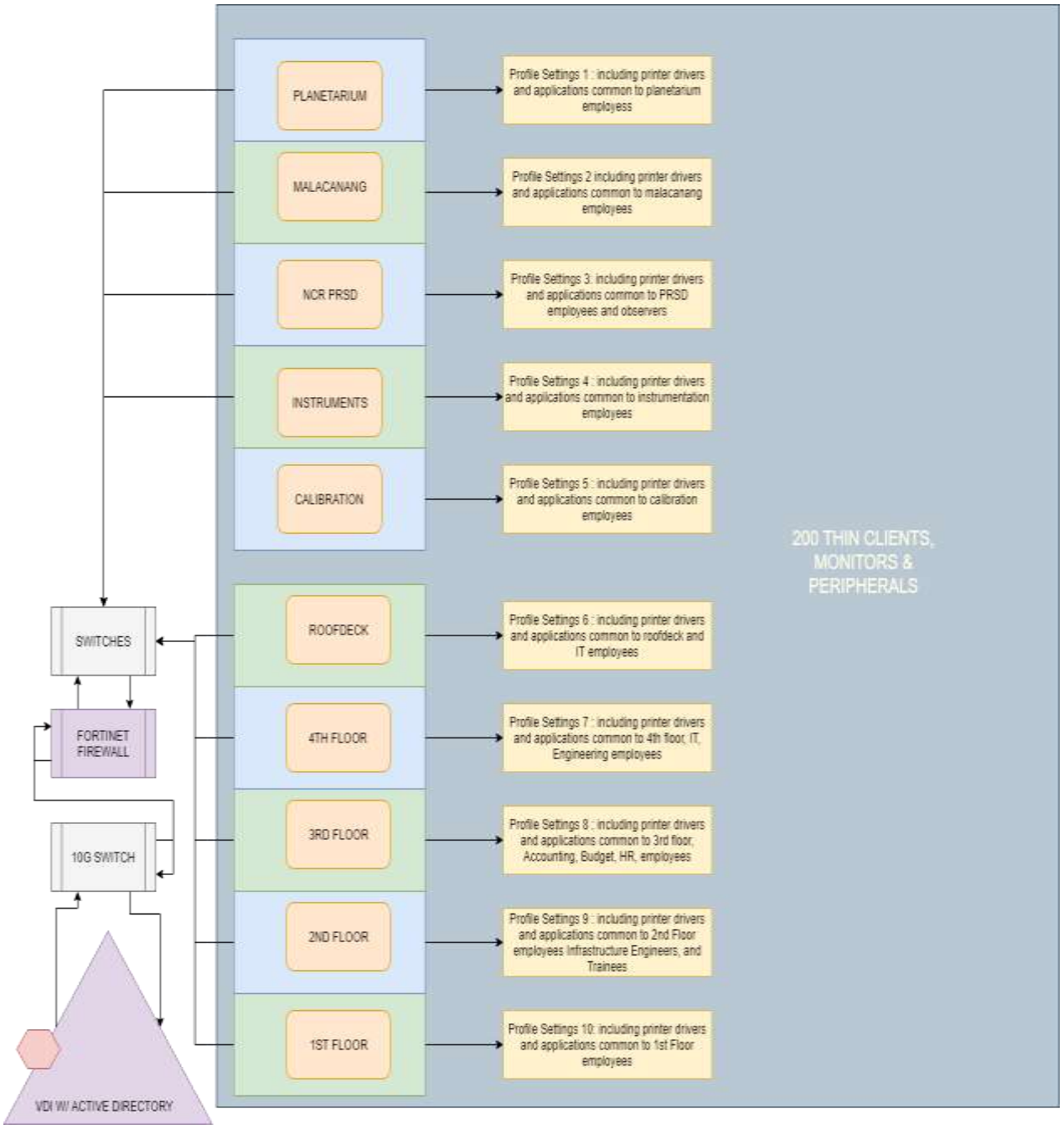
VDI allows the ICT technical staff to quickly add or patch applications, security is centralized for the endpoints, and the data can be positioned to be more effectively backed up. Also, maintenance for traditional desktop PCs are manually conducted for each endpoint including security patches or updates. These results delay in technical support because of limited IT technical support. VDI, eliminates these delays as support and maintenance is done remotely from the technical support's workstation.

Active Directory- Directory service that facilitates working with interconnected, complex and different network resources in a unified manner.

provide a common interface for organizing and maintaining information related to resources connected to a variety of network directories.
The directories may be systems-based, application-specific or network resources, like printers. serves as a single data store for quick data access to all users and controls access for users based on the directory's security policy

Moreover, Active Directory (AD) is a directory service that Microsoft developed for Windows domain networks and is included in most Windows Server operating systems as a set of processes and services.
An AD domain controller authenticates and authorizes all users and computers in a Windows domain type network assigning for all computers and installing or updating software.

Active Directory (AD) will be incorporated into VDI for the purpose of centralized usernames and password as well as multiple applications identity. This means that the end user needs one-time registration only. It is also secured as every data that passes through Active Directory are encrypted. Centralized user
credentials allow end users to login into any workstation within the Active Directory network without compromising the data security and access their personal data profile.


PLANETARIUM
Profile Settings 1 : including printer drivers and applications common to planetarium employess
MALACANANG
Profile Settings 2 including printer drivers and applications common to malacanang employees
NCR PRSD
Profile Settings 3: including printer drivers and applications common to PRSD employees and observers
INSTRUMENTS
Profile Settings 4 : including printer drivers and applications common to instrumentation employees
CALIBRATION
Profile Settings 5 : including printer drivers and applications common to calibration employees
200 THIN CLIENTS, MONITORS & PERIPHERALS
SWITCHES
FORTINET FIREWALL
10G SWITCH
VDI W/ ACTIVE DIRECTORY
ROOFDECK
Profile Settings 6 : including printer drivers and applications common to roofdeck and IT employees
4TH FLOOR
Profile Settings 7 : including printer drivers and applications common to 4th floor, IT, Engineering employees
3RD FLOOR
Profile Settings 8 : including printer drivers and applications common to 3rd floor, Accounting, Budget, HR, employees
2ND FLOOR
Profile Settings 9 : including printer drivers and applications common to 2nd Floor employees Infrastructure Engineers, and Trainees
1ST FLOOR
Profile Settings 10: including printer drivers and applications common to 1st Floor employees

2. **Approved Budget for the Contract**: Thirty Million Pesos (**Php 30,000,000.00**) inclusive of Value Added Tax (VAT), custom duties, and other government taxes.

3. **Bid Validity** - The bid shall remain valid for a period of 120 calendar days from the date of submission of bids

4. **Qualifications of Bidders** – (Please refer to Section II. Instructions to Bidders, the Bid Data Sheet and Checklist of Eligibility Requirements)

5. **Bid Proposal Contents** - The prospective bidder is expected to comply and respond in accordance with the specific instructions of bidders and submit the document requirements under checklist of Eligibility, technical and financial requirements. The submission of documentary requirements must be properly arranged in order and with label.

6. **Delivery Period and Place of Delivery** – The Winning Bidder shall supply, deliver, install, test and supervise of Virtual Desktop Infrastructure with Centralized User Identity, at the PAGASA Central Office, Science Garden Compound, Agham Road, Diliman, Quezon City, within sixty calendar days (60 c.d.), commencing from the date of issuance of the Notice to Proceed. Moreover, technical training and meeting related to the implementation VDI shall be provided by the winning bidder, within sixty calendar days (60 c.d.), commencing the date of issuance of the Notice to Proceed.

7. **Technical Specifications –** These specifications set out the requirement to be met in the supply, delivery, installation, testing and training of Virtual Desktop Infrastructure with Active Directory. All design, materials, manufacturing techniques and workmanship shall be in accordance with the highest accepted international standards for this type of systems

   A. **DATA CENTER SWITCHES**

   - Two (2) Switches (24 Port 10G SFP+2-Port 40GE QSFP+,2*AC Power Module, 2* Fan Box, Port side Exhaust
   - Eight (8) Electrical Transceiver, SFP, GE, Electrical Interface Module (100m, RJ45)
   - Twelve (12) Electrical Transceiver, SFP + 10G, Multi-Mode Module (850nm,0.3km,LC)
   - Twelve (12) Optical Transceiver, r,SFP+,10G,Multi-mode Module(850nm,0.3km,LC)-Hi-Care Standard 9x5xNBD Service-36 Month(s)

- Two (2) Cloud Engine Data Center Switches (24-Port 10G SFP+,2-Port 40GE QSFP+,2*AC Power Module,2*FAN Box, Portside Exhaust)-Hi-Care Standard 9x5xNBD Service 36 Month(s)

B. **HYPER-CONVERGED INFRASTRUCTURE**

- Two (2) Fusion server 2U 2 socket rack server (12*3.5inch HDD Chassis).
- Two (2) Optical Interface Network Card Onboard NIC,2x10GE Optical Interface(Intel 82599),SFP+(with 2x Multi-mode Optical Transceiver)
- Two (2) Storage performance council PCIe Riser Card,3 slot (x8,x8,x8)
- Two (2) Storage performance Council 2*2.5" Rear Hard Disk Backplane Module
- Eight (8) Storage Performance Council Function Module plus Fan Module
- Four (4) Switching power supply package 750W Platinum AC PSU
- Two (2) 2U Static Rail Kit
- Two (2) Server 2U Panel
- Four (4) Processor Intel Xeon E5-2680 v4(2.4GHz/14-core/35MB/120W) Processor (with heatsink)
- Thirty Two (32) DDR4 RDIMM Memory,32GB,2400MT/s,2Rank(2G*4 bit),1.2V,ECC
- Twenty Four (24) HDD,4000GB,SATA 6Gb/s,7.2K rpm,128MB cache or above,3.5inch(3.5inch Drive Bay)
- Four (4) HDD,600GB,SAS 12Gb/s,10K rpm,128MB or above,2.5inch(2.5inch Drive Bay)
- Two (2) SR130(LSI3008) SAS/SATA RAID Card,RAID 0,1,1E,10,Unsupported Out-of-Band Management,12Gb/s,no Cache, 12 & 25 HDD Chassis
- Two (2) SSD Card,800GB,Mixed Use,3 DWPD,PCIe 3.0 x4,HH/HL
- Three (3) 12*3.5inch HDD Chassis
- Three(3) Onboard NIC,2x10GE Optical Interface(Intel 82599),SFP+(with 2x Multi-mode Optical Transceiver)
- Three (3) PCIe Riser Card,3 slot(x8,x8,x8)
- Three (3) 2*2.5" Rear Hard Disk Backplane Module
- Twelve (12) 8056 Plus Fan Module
- Six (6) Switching Power Supply 750W Platinum AC PSU
- Three (3) 2U Static Rail kit
- Three (3) 2U Panel
- Six (6) Intel Xeon E5-2680 v4(2.4GHz/14-core/35MB/120W) Processor (with heatsink)
- Forty Eight (48) DDR4 RDIMM Memory,32GB,2400MT/s,2Rank(2G*4 bit),1.2V,ECC
- Thirty Six (36) HDD,4000GB,SATA 6Gb/s,7.2K rpm,128MB cache or above,3.5inch(3.5inch Drive Bay)

- Six (6) HDD,600GB,SAS 12Gb/s,10K rpm,128MB or above,2.5inch(2.5inch Drive Bay)
- Three (3) SR130(LSI3008) SAS/SATA RAID Card, RAID 0,1,1E,10,Unsupported Out-of-Band Management,12Gb/s,no Cache, 12& 25HDD

- Three (3) ES3600C V3,NVMe SSD Card,800GB,Mixed Use,3 DWPD,PCIe 3.0 x4,HH/HL
- Ten (10) Patch Cord,DLC/PC,DLC/PC,Multimode,5m,A1b,2mm
- Five (5) Signal Cable, Shielded Straight Through Cable,5m, MP8-II, CC4P0.5GY(S), MP8-II, FTP
- Two Hundred Forty (240) Distributed Block Storage Software Standard Edition Capacity License, per TB
- One (1) Distributed Block Storage Software Standard Edition Basic Software Suite License
- Two Hundred Forty (240) Distributed Block Storage Software Standard Edition,1 Year Subscription and Support Service, per TB
- Five (5) (12*3.5inch HDD Chassis) (Only for oversea, except Japan) H22H-03-Hi-Care Onsite Standard 9x5xNBD Engineer Onsite Service 36 Month(s)
- Five (5) SSD Card,800GB,Mixed Use,3 DWPD,PCIe 3.0 x4,HH/HL-Hi-Care Onsite Standard 9x5xNBD Engineer Onsite Service-36 Month(s)

C. **FUSION CLOUD ACCESS SOLUTION and ACCESSORIES**

- Two Hundred (200) Thin Client,Intel 2.41GHz Dual Core,4G,16G,1000M,DVI-I and DP,Linux English Version,ST5110,DVI-HDMI adapter, Dual display line,Wifi
- Two Hundred (200) Thin Client, Optional Accessories-change DVI-I to DVID+VGA Dual display line
- Two Hundred (200) USB,High Quality Keyboard & Mouse, Optional Accessory for Thin Client

D. **SOFTWARE**

- Two Hundred (200) FusionAccess Standard Edition License, per User
- Two Hundred (200) FusionAccess Standard Edition,1 Year Subscription and Support, per User
- Two Hundred (200) FusionAccess Integration Service-VDI Service Provisioning
- WinSvrSTDCore LicSAPk OLP 2Lic NL Gov CoreLic (30)
- SQLSvrStd LicSAPk OLP NL Gov (1)
- SQLCAL LicSAPk OLP NL Gov DvcCAL (2)
- WinSvrSTDCore 2016 OLP 2Lic NL Gov CoreLic (8)
- WinSvrCAL 2016 OLP NL Gov UsrCAL (1500)
- VDAE3PerDvc ALNG SubsVL OLV D 1Mth AP PerDvc (200)

E. **FUSSION ACCESS BACK UP**

- Fifteen (15) Thin Client,Intel 2.41GHz Dual Core,4G,16G,1000M,DVI-I and DP,Linux English Version,ST5110,DVI-HDMI adapter, Dual display line,Wifi

F. **HARDWARE REQUIREMENTS**

- One Lot (1) Fussion Solution Implementation Services
- One (1) Rack Cabinet 19" x 42RU (Outside Dimension : 620mmW x 1035mm x 2080mmH) (Usable Space Inside : 19"W x 700mmD x 42RU)
- Five (5) Windows Server 2016 (Active Directory)
- Two Hundred (200) Windows 10 Pro
- Two Hundred (200) MS Office
- Two Hundred (200) 21 inch Monitor
- Two Hundred (200) Mouse and keyboard
- Two Hundred (200) Headset
- Two Hundred (200) sets of Thin Clients

G. **Active Directory Configuration**

- Provide configuration and integration service for creation of Active directory for each user

H. **SITE ACCEPTANCE TEST (SAT) and On-Site Training**

The purpose of Site acceptance and on-site training is to verify the performance of the system in accordance with the specifications and functional requirements, defects or the winning bidder should rectify deviation discovered during site acceptance test immediately or within one (1) month period from the completion of test, after correction, testing should be done to verify the modifications.

The SAT shall be witnessed and accepted by at least five (5) members of the PAGASA IT Staff and/or end user and shall be conducted within a total of seven (7) Calendar days, five (5) days on-site training on VDI and Active Directory. All expenses related to the on-site training on VDI and Active Directory shall be shouldered by winning bidder for a minimum of at least (5) participants.

I. **SYSTEM COMMISSIONING**

After the satisfactory conclusion of the Site Acceptance Test, the Winning Bidder shall demonstrate the capability of the virtual desktop infrastructure which will be operated continuously for a period of 14-days. The successful demonstration of virtual desktop infrastructure signify that the project is being commission.

J. **WARRANTIES**

The Winning Bidder shall warrant all workmanship, system parts, accessories, other materials and equipment and services for three (3) years. The winning bidder shall be required to post a warranty bond in any acceptable form under the procurement law in order to assure that manufacturing defects will be address within the warranty period. During the warranty period, any workmanship, system parts, accessories, other materials and equipment that fails to provide satisfactory operation shall be timely replace at the expense of the winning bidder. The repair of any defective material or equipment may be permitted provided, however, that,

the item/s being repaired is/are restored to its/their original specifications.

Procedure: Upon receipt and acknowledgment of PAGASA's report of such defect or problem, the winning bidder warrants that it shall take the necessary remedial action/s within seven (7) calendar days or any specified period acceptable to PAGASA. Failure on the part of the winning bidder to take appropriate action on within the specified period shall render the winning bidder liable for penalty using the following formula: one percent (1%) of cost of material(s) to be replaced/repaired multiplied by number of days of delay. Said penalty shall be charged against any collectible amount by the winning bidder to PAGASA or shall be deducted from the warranty bond posted by the Winning Bidder in favor of PAGASA. While the equipment is undergoing repair, a spare unit shall be substituted thereto to maintain the continuous operation of the system.

K. **AFTER SALES SUPPORT**

The Winning Bidder shall include in its bid a commitment for at least three (3) years support to PAGASA for the repair and maintenance of the equipment to be supplied.

It shall include in its commitment a provision of a reliable, swift and efficient on-site support, available 24/7 trouble and ticketing and response system (especially during critical events), and ensure a quick and readily available supply of spare and replacement parts.

L. **Service Level/ Support Structure:**

Priority	**Incident**	**Description/Basic Support**	**Response Time**	**Commitment**
1	**Production or development system down** Technical Services Engineer on-site	An error that renders product inoperative or causes the product to fail catastrophically. Major system impact, system down. Inability to use the licensed product or a critical impact on operations requiring immediate solutions.	The winning bidder shall agree to use commercially reasonable efforts to respond to the Client's trouble calls within four (4) hours in Metro Manila area.	The Winning Bidder will commit the necessary resources around the clock to resolve the situation or obtain workaround.
2	**Moderate**	An error that	Within eight	The Winning

	system impact, system hanging Technical Services Engineer on-site	substantially degrades the performance of the product or materially restricts business. Ability to use licensed product, but an important function is not available and operations are severely impacted.	(8) hours in Metro Manila area.	Bidder will commit full-time resources during normal business hours to resolve the situation (or obtain workaround) and alternative resources.
3	**Minor feature or function failure** Telephone Support	The defect can be easily circumvented. The error can cause some functional restrictions but it does not have a critical or severe impact on operations	Within 24 hours	The Winning Bidder will commit full-time resources during normal business hours to restore service to satisfactory level.
4	**Minor Question** Telephone Support	Questions regarding product features, hardware sizing, performance issue, TCP/IP related questions, platform questions.	Within 24 hours	The Winning Bidder will provide resources during normal business hours to provide information assistance as requested.

M. **SYSTEM DOCUMENTATIONS**

The Winning Bidder shall likewise provide PAGASA with the VDI installation, operations and maintenance manuals. Said manuals shall contain among others the complete and detailed schematic diagrams, theory of operations, and maintenance procedures. This should also provide modifications on the original setup of the VDI. All other hardware and software requirements shall also be turned-over to PAGASA prior to the issuance of the Final Inspection and Acceptance report. In addition, the Winning Bidder shall provide a complete list of deliverables and installation materials.